

AMENDMENTS TO THE CLAIMS

1 1-4. (canceled)

1 5. (currently amended) ~~The A method of claim 1, for implementing management~~
2 policies on a network using topology reduction, the network including at least a first
3 domain having a plurality of network elements, the method comprising:
4 determining one or more management components in the network;
5 determining two or more domains, wherein each (a) is bounded, in the network, by
6 one or more of the management components and (b) does not contain any
7 management components;
8 determining a communication path passing through the first domain of the network
9 that characterizes the first domain as a node, the communication path being
10 characterized to pass communications without information loss; and
11 implementing a management policy for the network using the communication path;
12 wherein determining ~~[[a]]~~the communication path passing through the first domain
13 includes:
14 identifying a second domain for a source element of a communication that uses the
15 communication path, the second domain including a plurality of network
16 elements;
17 identifying a third domain for a destination element for the communication, the third
18 domain including a plurality of network elements;
19 characterizing a portion of the communication path within the second domain as a
20 distance between the source element and an interface to the second domain,

21 the portion of the communication path within the second domain being
 22 characterized without information loss; and
 23 characterizing a portion of the communication path within the third domain as a
 24 distance between the destination element and an interface to the third domain,
 25 the portion of the communication path within the third domain being
 26 characterized without information loss.

1 6. (currently amended) The method of claim ~~[[1]]~~5, wherein determining ~~[[a]]~~the
 2 communication path passing through the first domain includes identifying a ~~second~~
 3 particular domain containing a particular source element and a particular destination
 4 element, a communication from the particular source element being signaled from the
 5 ~~second-particular~~ domain to the first domain before being signaled to the particular
 6 destination element ~~in the second domain~~.

1 7. (currently amended) The method of claim ~~[[1]]~~5, wherein determining ~~[[a]]~~the
 2 communication path passing through the first domain includes:
 3 ~~identifying a second domain for a source element of a communication that uses the~~
 4 ~~communication path, the second domain including a plurality of network~~
 5 ~~elements;~~
 6 ~~identifying a third domain for a destination element for the communication, the third~~
 7 ~~domain including a plurality of network elements;~~
 8 ~~characterizing a portion of the communication path within the second domain as a~~
 9 ~~distance between the source element and an interface to the second domain,~~

the portion of the communication path within the second domain being
characterized without information loss; and
characterizing a portion of the communication path within the third domain as a
distance between the destination element and an interface to the third domain,
the portion of the communication path within the third domain being
characterized without information loss; and
characterizing a portion of the communication path passing through the first domain
as a distance between the second domain and the third domain.

8. (currently amended) [[A]]The method of claim 5, wherein determining the two or
more domains comprises: for implementing management policies on a network using
a policy server, the method comprising:
identifying a plurality of domains in the network, the plurality of domains each
including a plurality of network elements;
identifying a particular first domain in the plurality of two or more domains having a
cloudification characteristic, the particular first domain having at least a first
management component and a corresponding interface that forms an edge to
the particular first domain; and
characterizing at least a first communication path for communications having an end
element within the particular first domain as being a distance between the
corresponding interface to the particular first domain and the end element, the
first communication path passing communications without information loss.

9. (canceled)

1 10. (currently amended) The method of claim 8, further comprising storing the first
2 communication path as a data structure defining the distance between the
3 corresponding interface to the particular first domain and the end element.

1 11. (currently amended) The method of claim 8, wherein the one or more management
2 components comprise identifying a plurality of domains in the network includes
3 identifying a plurality of management components, each management component in
4 the plurality of management components having a corresponding interface and
5 forming an edge for at least one domain.

1 12. (currently amended) The method of claim 8, wherein determining identifying a
2 plurality of the two or more domains in the network includes identifying a plurality of
3 network elements that are interconnected between one or more interfaces of
4 management components.

1 13. (currently amended) The method of claim 8, wherein determining identifying a
2 plurality of the two or more domains in the network includes identifying a plurality of
3 firewall components, each firewall component having a corresponding interface and
4 forming an edge for at least one domain.

1 14. (currently amended) The method of claim 8, wherein identifying a ~~first~~ the particular
2 domain in the plurality of domains having a cloudification characteristic includes
3 determining that the first management component has only one interface to the ~~first~~
4 particular domain.

1 15. (currently amended) The method of claim 8, wherein identifying a ~~first~~ the particular
 2 domain ~~in the plurality of domains having a cloudification characteristic~~ includes
 3 determining that each management component for the ~~first~~ particular domain has
 4 multiple interfaces to the ~~first~~ particular domain, wherein each of the multiple
 5 interfaces are configured to forward communications received from a network
 6 element within the ~~first~~ particular domain to another element or interface that is
 7 exterior to the ~~first~~ particular domain.

1 16. (currently amended) The method of claim ~~[[10]]~~8, wherein identifying a ~~first~~ the
 2 particular domain ~~in the plurality of domains having a cloudification characteristic~~
 3 includes determining that the ~~first~~ particular domain has only one or two
 4 corresponding interfaces that form edges for ~~that~~ the particular domain.

1 17. (currently amended) ~~[[A]]~~The method of claim 5, wherein determining the two or
 2 more domains comprises: for implementing management policies on a network using
 3 a policy server, the method comprising:
 4 identifying a plurality of domains in the network, each of the plurality of domains
 5 having at least one network element;
 6 identifying a plurality of cloudified domains from the plurality of domains, each
 7 cloudified domain being bounded by a management component and at least
 8 one interface for the management component;
 9 identifying a particular source element and a particular destination element for a
 10 communication; and

11 defining a plurality of communication paths passing within a first cloudified domain
12 in the plurality of cloudified domains, each of the plurality of communication
13 paths characterizing the first cloudified domain as a distance between an
14 interface to the first cloudified domain and an end point element, the end point
15 element characterizing at least one of the particular source element and the
16 particular destination element, each of the plurality of communication paths
17 passing communications within the first cloudified domain without
18 information loss.

1 18-21. (canceled)

1 22. (original) The method of claim 17, wherein identifying at least a first path in the
2 plurality of communication paths includes characterizing the communication passing
3 through a second cloudified domain in the plurality of domains as a node.

1 23. (original) The method of claim 17, wherein identifying at least a first path in the
2 plurality of communication paths includes:
3 characterizing the communication passing through a second cloudified domain in the
4 plurality of domains as a node; and
5 characterizing the communication passing through a third cloudified domain in the
6 plurality of domains as a second distance between an interface to the third
7 cloudified domain and an end point element within the third cloudified
8 domain.

1 24-33. (canceled)

1 34. (new) The method of claim 5, wherein implementing the management policy includes
2 implementing a firewall configuration on the communication path.

1 35. (new) A computer-readable medium for implementing a management policy on a
2 network that includes at least a first domain having a plurality of network elements,
3 the computer readable medium carrying instructions for performing the steps of:
4 determining one or more management components in the network;
5 determining two or more domains, wherein each (a) is bounded, in the network, by
6 one or more of the management components and (b) does not contain any
7 management components;
8 determining a communication path passing through the first domain of the network
9 that characterizes the first domain as a node, the communication path being
10 characterized to pass communications without information loss; and
11 implementing a management policy for the network using the communication path;
12 wherein determining the communication path passing through the first domain
13 includes:
14 identifying a second domain for a source element of a communication that uses the
15 communication path, the second domain including a plurality of network
16 elements;
17 identifying a third domain for a destination element for the communication, the third
18 domain including a plurality of network elements;
19 characterizing a portion of the communication path within the second domain as a
20 distance between the source element and an interface to the second domain,

21 the portion of the communication path within the second domain being
22 characterized without information loss; and
23 characterizing a portion of the communication path within the third domain as a
24 distance between the destination element and an interface to the third domain,
25 the portion of the communication path within the third domain being
26 characterized without information loss.

1 36. (new) An apparatus for implementing a management policy on a network that
2 includes at least a first domain having a plurality of network elements, the apparatus
3 comprising:
4 means for determining one or more management components in the network;
5 means for determining two or more domains, wherein each (a) is bounded, in the
6 network, by one or more of the management components and (b) does not
7 contain any management components;
8 means for determining a communication path passing through the first domain of the
9 network that characterizes the first domain as a node, the communication path
10 being characterized to pass communications without information loss; and
11 means for implementing a management policy for the network using the
12 communication path;
13 wherein the means for determining the communication path passing through the first
14 domain includes:
15 means for identifying a second domain for a source element of a communication that
16 uses the communication path, the second domain including a plurality of
17 network elements;

18 means for identifying a third domain for a destination element for the communication,
19 the third domain including a plurality of network elements;
20 means for characterizing a portion of the communication path within the second
21 domain as a distance between the source element and an interface to the
22 second domain, the portion of the communication path within the second
23 domain being characterized without information loss; and
24 means for characterizing a portion of the communication path within the third domain
25 as a distance between the destination element and an interface to the third
26 domain, the portion of the communication path within the third domain being
27 characterized without information loss.